48DJ,DK,NP034-074
48FJ,FK,FP,JJ,JK,JP034-074
Accessory LP (Liquid Propane) Gas Conversion Kit

Installation and Start-Up Instructions

Part No. 50DJ902---571, 50DJ902---581, and 50DJ902---591

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GENERAL

These instructions cover the installation and start-up of a propane conversion kit on 48DJ,DK,FJ,FK,FP,JJ,JK,JP,NP034-074 gas heating/electric cooling units. Refer to Table 1 for kit numbers and contents.

NOTE: Save all original natural gas parts in case conversion back to natural gas should become necessary.

Table 1 — Propane Conversion Kit Contents and Part Numbers

UNIT	48DJD,DKD,FJD, FKD,FPD,JJD,JKD, JPD,NPD034-048 LOW HEAT	48DJE,FJE,FKE,FPE,JJE, JKE,JPE,NPE034-048 HIGH HEAT AND 48DJD,DKD,FJD,FKD,FPD, JJD,JKD,JPD,NPD054-074 LOW HEAT	48DJE,FJE,FKE,FPE, JJE,JKE,JPE,NPE054-074 HIGH HEAT
PART NO.	**50DJ902---571**	**50DJ902---581**	**50DJ902---591**
CONTENTS			
Burner Orifices (No. 48 Spuds)	LH32RF076 (6)	LH32RF076 (12)	LH32RF076 (18)
Crossover Tube with Orifices	50DW504152 (1)	50DW504152 (2)	50DW504152 (3)
Gas Pressure Switch	HK02LB016 (1)	HK02LB016 (1)	HK02LB016 (1)
Nipple (⅛ in. x 1½ in.)	CA01CA020 (1)	CA01CA020 (1)	CA01CA020 (1)
Wiring Labels	50DW504161 (2)	50DW504162 (2)	50DW504164 (2)
	50DW504162 (2)	50DW504163 (2)	—
	—	50DW504164 (2)	—
Pilot Tube Label	50DW504158 (1)	50DW504158 (2)	50DW504158 (3)
Propane Conversion Label	50DW504160 (1)	50DW504160 (1)	50DW504160 (1)
Conversion Responsibility Label	50DW504159 (1)	50DW504166 (1)	50DW504167 (1)
Wires			
Blue (6 in.)	* (1)	—	—
Red (84 in.)	* (2)	* (2)	* (2)
Connector	HY89SB020 (6)	HY89SB020 (4)	HY89SB020 (4)
Spacer/Washer	* (10)	* (20)	* (30)
Pop Rivets			
Stainless Steel	AV83JA180 (4)	AV83JA180 (8)	AV83JA180 (12)
Aluminum	AV83VA165 (4)	AV83VA165 (8)	AV83VA165 (12)
Pilot Tube with Nut	50DW404170 (2)	50DW404170 (4)	50DW404170 (6)
Pilot Tube	50DW504174 (1)	50DW504174 (2)	50DW504174 (3)
Tee (Compression)	DC18CA051 (1)	DC18CA051 (2)	DC18CA051 (3)
Elbow	DD10CA053 (1)	DD10CA053 (2)	DD10CA053 (3)
Shield	50DW504172 (1)	50DW504172 (2)	50DW504172 (3)
Flue Restriction	50DW502684 (1)	50DW502684 (2)	50DW502684 (3)
Blockoff	—	50DW504208 (1)	50DW504208 (2)
Air Baffle	—	50DW504209 (1)	50DW504209 (1)
Screws	—	AL79AV166 (4)	AL79AV166 (6)
Ferrule	DC20CA051 (1)	DC20CA051 (2)	DC20CA051 (3)

*Indicates no part number for this item.

NOTE: Number in ( ) represent the quantity of each item included in the kit.

Manufacturer reserves the right to discontinue, or change at any time, specifications or designs without notice and without incurring obligations.

⚠ WARNING

This conversion kit is to be installed by qualified service personnel in accordance with these installation instructions and all codes and requirements of the authority having jurisdiction, and in Canada, in accordance with the requirements of the CAN/CGA (Canadian Gas Association) B149.1 and B149.2 Installation Code. Failure to follow these instructions could result in serious injury or property damage. The qualified agency performing this work assumes responsibility for this conversion.

INSTALLATION

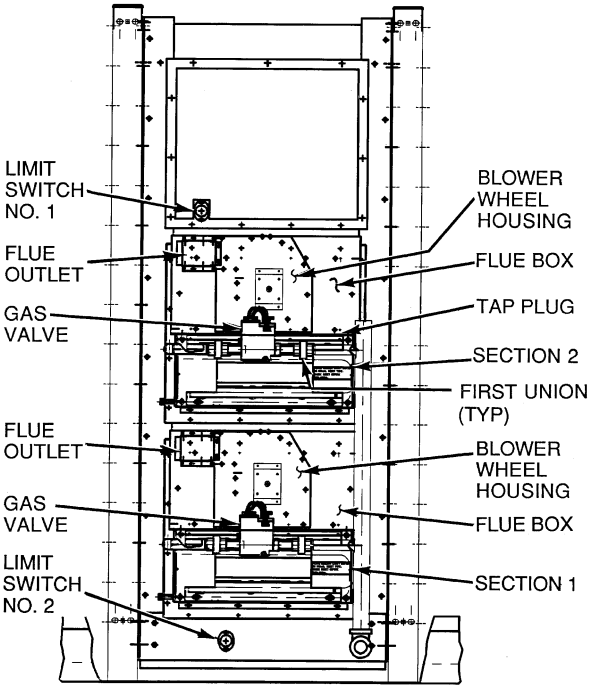
⚠ WARNING

Turn off the gas supply, then the electrical power to the unit before starting the installation. Tag the disconnect switch with a suitable warning label. Electrical shock can cause personal injury or death.

Installing Mechanical Components — Proceed as follows to install the mechanical components contained in the kit:

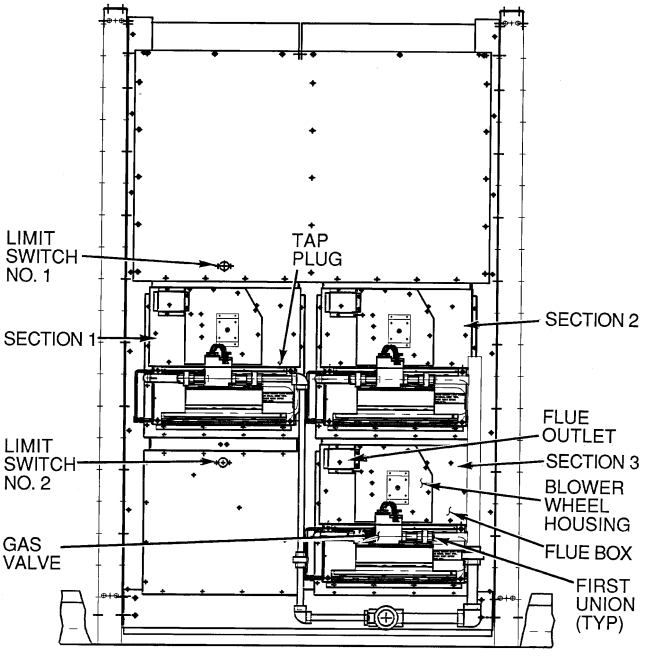
1. Open and remove gas section door.

   NOTE: Perform Steps 2 through 22 for each burner section. There is 1 section on low heat 034-048 units, 2 sections on high heat 034-048 units and low heat 054-074 units, and 3 sections on high heat 054-074 units.
2. Disconnect the gas line at the first union of the assembly. See Fig. 1 and 2.
3. Disconnect the plug in the wiring harness going to the gas valve and rollout switch.
4. Disconnect the ignitor and sensor wires at the sparker module (ICP). Label the wires prior to removing to ensure they will be reconnected properly.



NOTE: High heat consists of Sections 1 and 2. Low heat consists of Section 1 only.

Fig. 1 — Gas Section Details, Sizes 034-048



NOTE: High heat consists of Sections 1-3. Low heat consists of Sections 1 and 2 only.

Fig. 2 — Gas Section Detail, Sizes 054-074

5. Remove the 2 screws which fasten the top of the burner assembly to the flue box, and carefully remove the burner assembly from the unit. See Fig. 3.
6. Disconnect the pilot tube from the gas valve. See Fig. 4.
7. Disconnect the manifold (with the spuds attached) from the burner assembly and remove the manifold assembly with the gas valve attached. Remove the burners. See Fig. 4.
8. Disconnect the burner bracket from the burner assembly and remove the burner bracket with the crossover tube attached. See Fig. 4.
9. Remove the crossover tube from the burner bracket. Be careful not to distort or damage the ignitor or sensor. See Fig. 4 and 5.
10. Drill out the pop rivets holding the ignitor and sensor to the burner bracket using a ⅛-in. diameter drill bit.

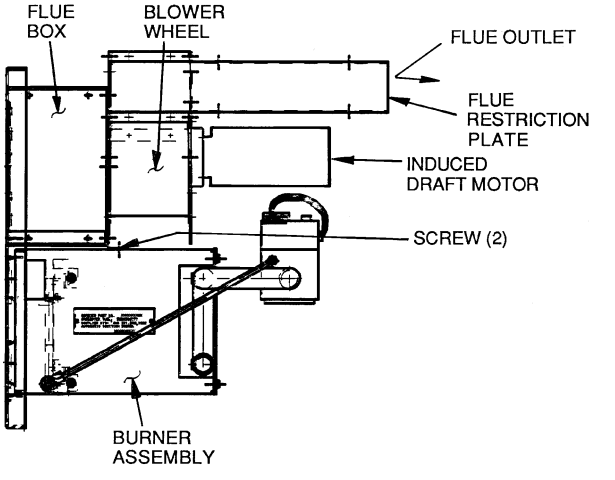


Fig. 3 — Flue Box Assembly (Shown with Burner Assembly)

11. Remove screws holding ignitor shield to the burner bracket. Install new shorter ignitor shield from kit. See Fig. 6.
12. Install new, dual-orifice crossover tube from accessory kit onto the burner bracket. Be sure to install crossover tube with spacers provided to space tube away from the burner bracket as shown in Fig. 5.
13. Reinstall ignitor and sensor onto opposite side of burner bracket. Be sure to install ignitor and sensor as shown in Fig. 5 using spacers and pop rivet provided so that gap is as shown.
14. Reattach the burner bracket to the burner assembly.
15. Remove the spuds from the manifold assembly and install the new no. 48 spuds from the accessory kit. Make sure that the spuds are not cross threaded.
16. Adjust the primary air opening on all of the burners to ½ inch. See Fig. 7.
17. Reattach the manifold assembly to the burner assembly with the burners in place. Be sure that the spring washers are in place between the burners and the spuds and that the burners are aligned properly. Also check that the rollout switch capillary is located properly. See Fig. 4.

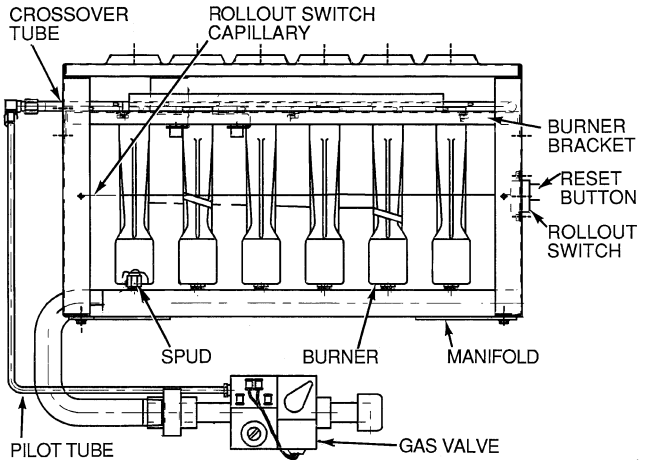


Fig. 4 — Burner Section Detail

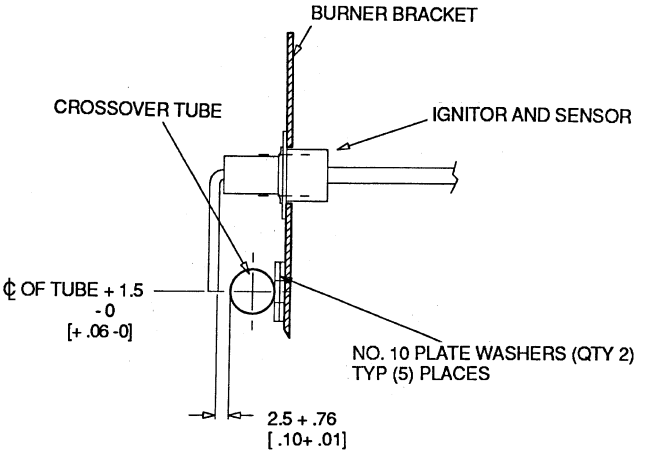


Fig. 5 — Burner Bracket Spacing

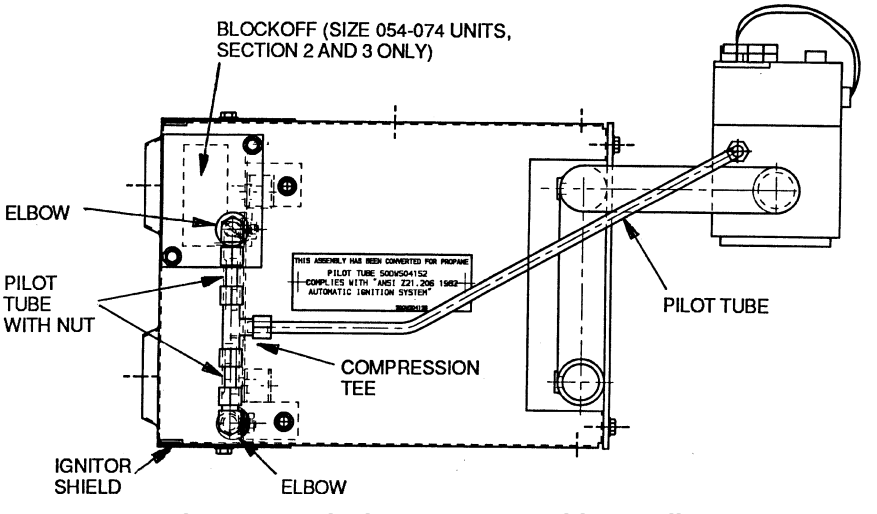


Fig. 6 — Typical Burner Assembly Details

18. On 054-074 units only (Skip to Step 19 for 034-048 units):
    a. Attach air baffle to the right side of the burner assembly FOR SECTION NUMBER ONE ONLY using screws provided. See Fig. 8 and 9.
    b. Attach the block-off plate to the left side of the burner assembly FOR SECTION NUMBER TWO (low heat units) or SECTION NUMBERS TWO AND THREE (high heat units) ONLY using screws provided. See Fig. 6 and 10.
19. All units: Cut the old pilot tube and remove the threaded compression fitting which connects to gas valve. Put the compression fitting on the new pilot tube and slide on the ferrule supplied with the kit. Connect the pilot tube to the gas valve. Put the elbow removed from old crossover tube on one end of the new crossover. Put elbow from kit on the other end of the new crossover tube. Connect new pilot tube and new compression tee as shown in Fig. 6.
20. Apply pilot tube label from kit over the existing label on the side of the burner assembly. See Fig. 11.
21. Reinstall burner assembly in unit. Reconnect plug and sensor and ignitor wires.
22. Install 7/16-in. wide flue restriction on flue outlet using pop rivets provided. On 034-048 units, remove larger restriction plate and install new plate in the same place. See Fig. 3 and 12.
23. Install low gas pressure switch from kit:
    Remove tap plug from the inlet manifold. See Fig. 1 and 2.
24. Using joint compound, assemble switch and 1½ in. long nipple provided.
25. Install this assembly on the inlet manifold.

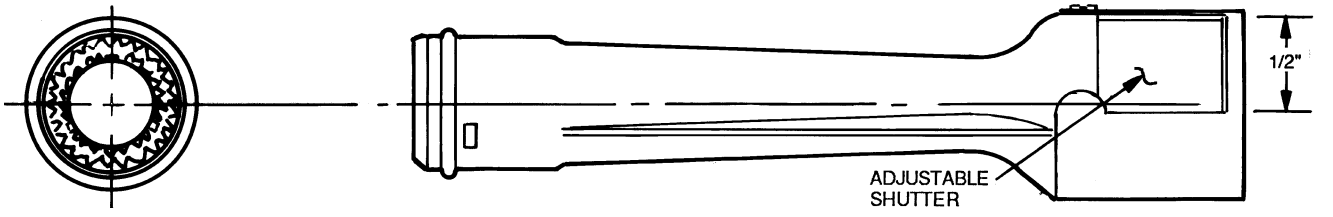


Fig. 7 — Primary Air Opening Adjustment

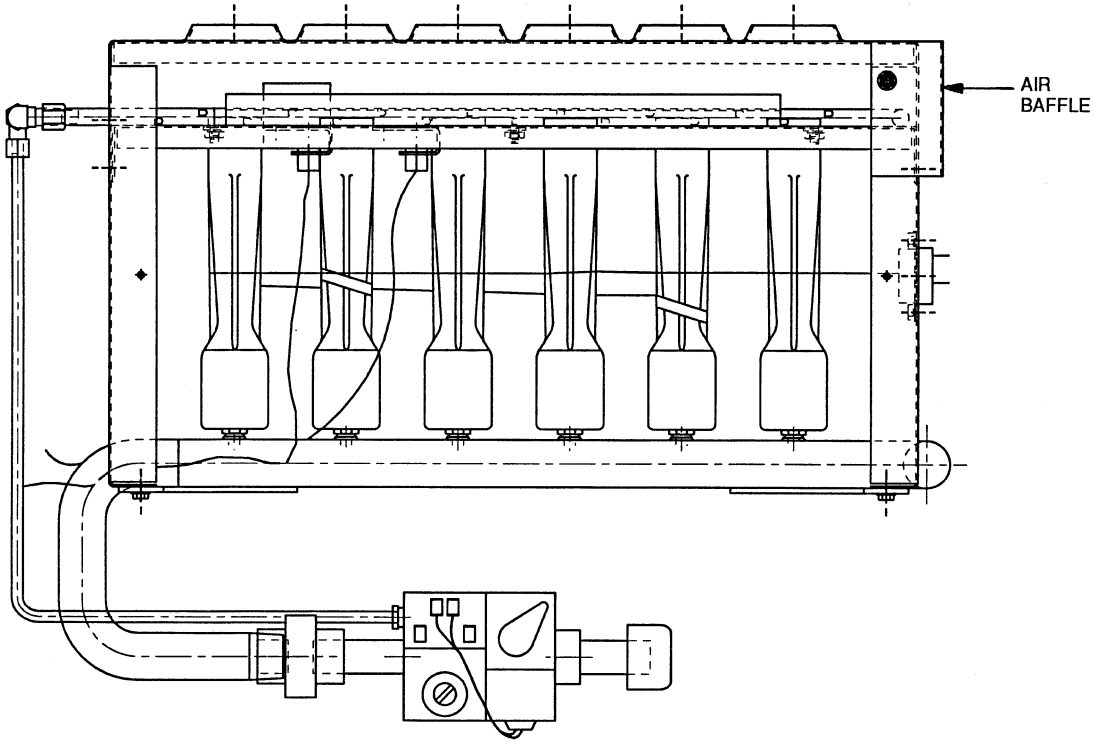
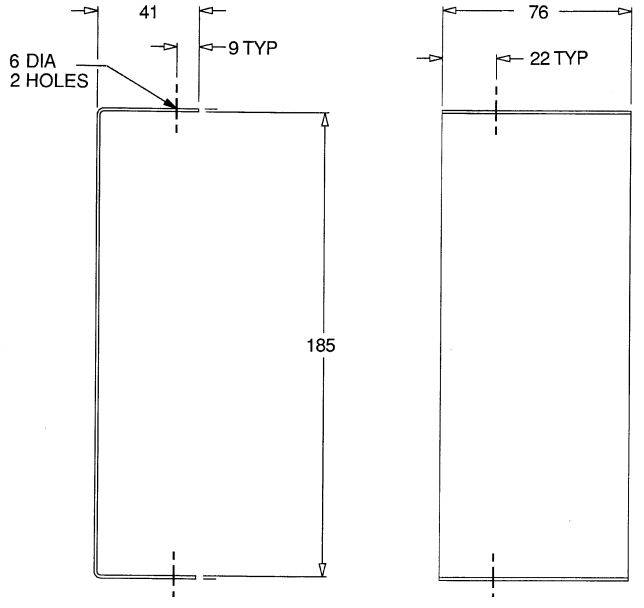
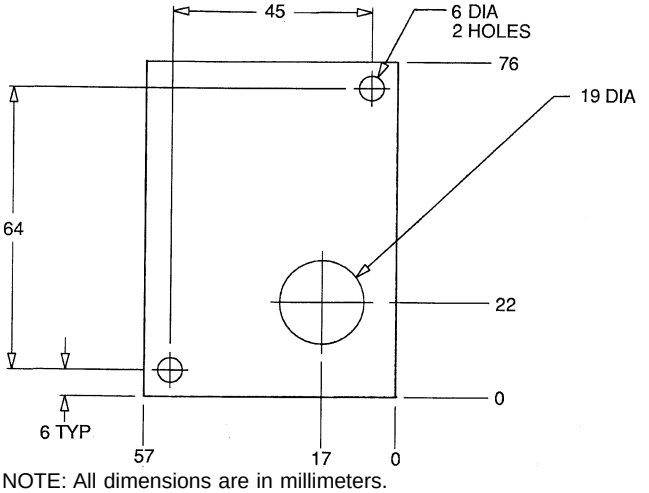


Fig. 8 — Air Baffle Location, Size 054-074 Units, Section 1 Only



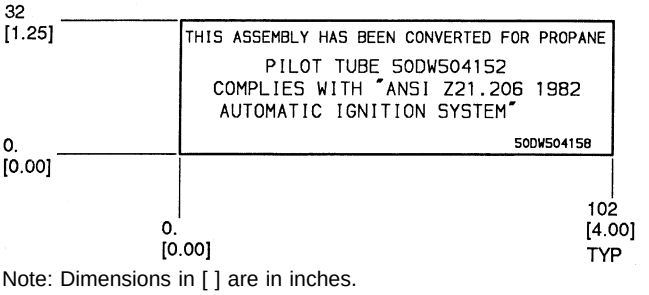
NOTE: All dimensions are in millimeters.

Fig. 9 — Air Baffle



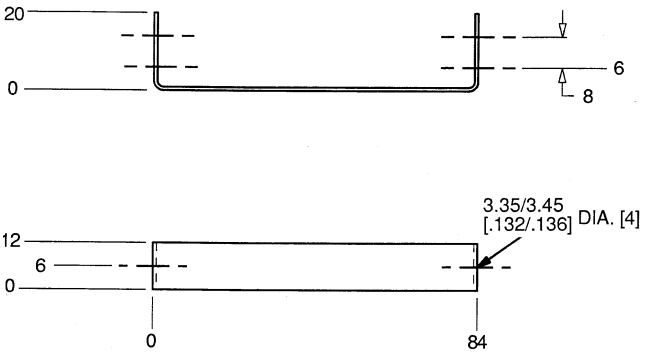
NOTE: All dimensions are in millimeters.

Fig. 10 — Block-Off Plate



Note: Dimensions in [ ] are in inches.

Fig. 11 — Pilot Tube Label



NOTE: Dimension in [ ] are in inches.

Fig. 12 — Flue Restriction Plate

Wiring

48DJD,FJD,FPD,JJD,JPD,NPD034-048 UNITS (See Fig. 13)

1. Attach the two 84-in. long red wires supplied to the low gas pressure switch (GPS).
2. Locate the red wire going from pressure switch (PS1) to ICP1 terminal TH.
3. Remove the red wire from ICP1 terminal TH, and cut the terminal off from the wire.
4. Connect stripped wire from the GPS to the red wire just removed from ICP1 terminal TH using the connector provided. Connect the other red wire from the GPS to ICP1 terminal TH.
5. Remove the black (BLK) wire from gas valve terminal W2, and insulate the terminal.
6. Install the 6-in. long blue jumper wire supplied between terminal W1 and W2 on the gas valve.

48DKD,FKD,JKD034-048 UNITS (See Fig. 14)

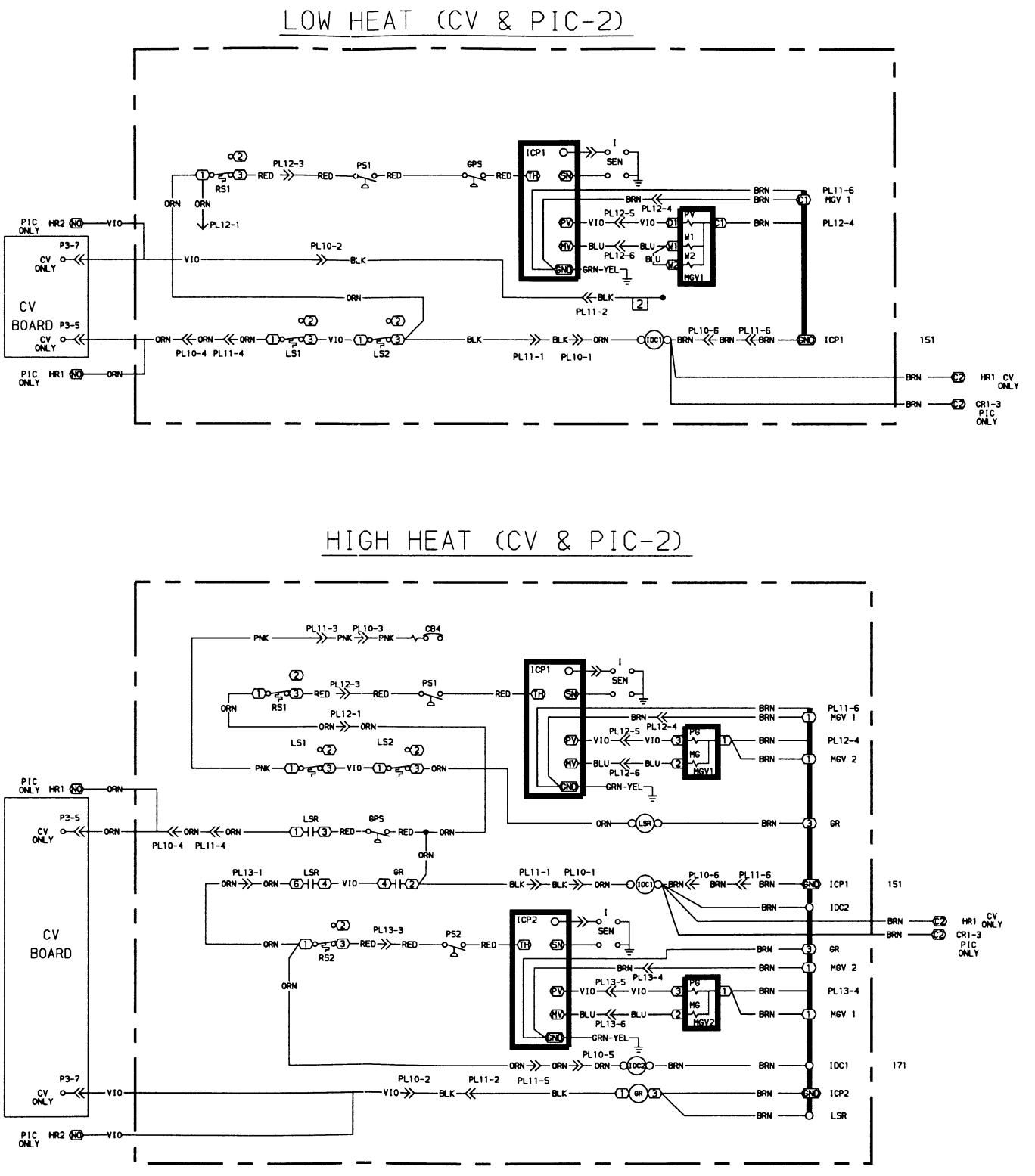
1. Attach the two 84-in. long red wires supplied to the low gas pressure switch (GPS).
2. Locate the red wire going from pressure switch (PS1) to ICP1 terminal TH.
3. Remove the red wire from ICP1 terminal TH and cut the terminal off from the wire.
4. Connect stripped wire from the GPS to the red wire just removed from ICP1 terminal TH using the connector provided. Connect the other red wire from the GPS to ICP1 terminal TH.

48DJE,FJE,FPE,JJE,JPE,NPE034-048 UNITS (See Fig. 13)

1. Attach the two 84.-in. long red wires supplied to the low gas pressure switch (GPS).
2. Remove the 2 orange (ORN) wires from limit switch relay (LSR) terminal 3. Connect the stripped wire from GPS to the 2 ORN wires just removed using the connector provided.
3. Connect the other red wire from the GPS to LSR terminal 3.

48DJD,DJE,FJD,FJE,FPD,FPE,JJD,JJE,JPD,JPE,NPD, NPE054-074 UNITS (See Fig. 15)

1. Attach the two 84-in. long red wires supplied to the low gas pressure switch (GPS).
2. Remove the orange (ORN) wires from limit switch relay (LSR) terminal 3. Connect the stripped wire from GPS to the ORN wire just removed using the connector provided.
3. Connect the other red wire from the GPS to LSR terminal 3.

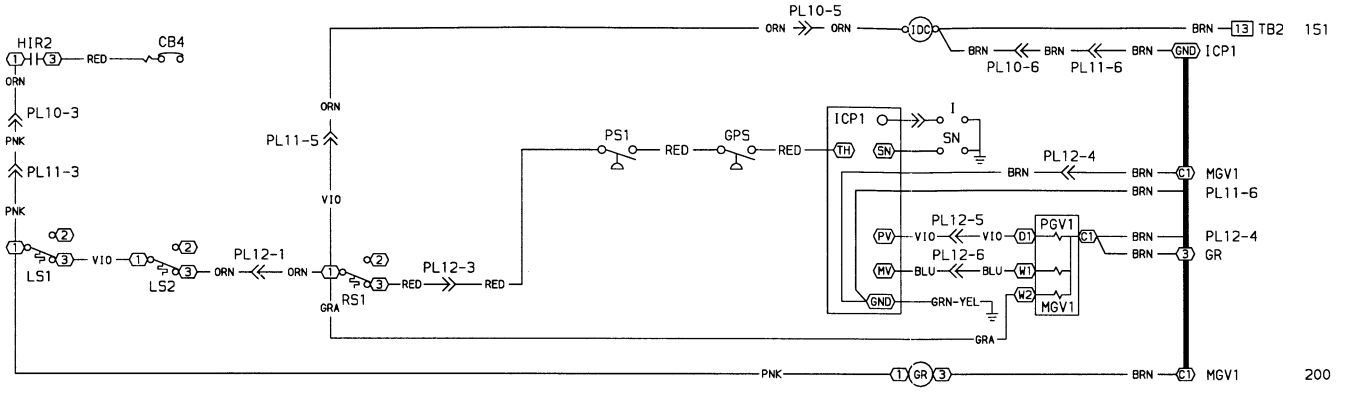


LEGEND

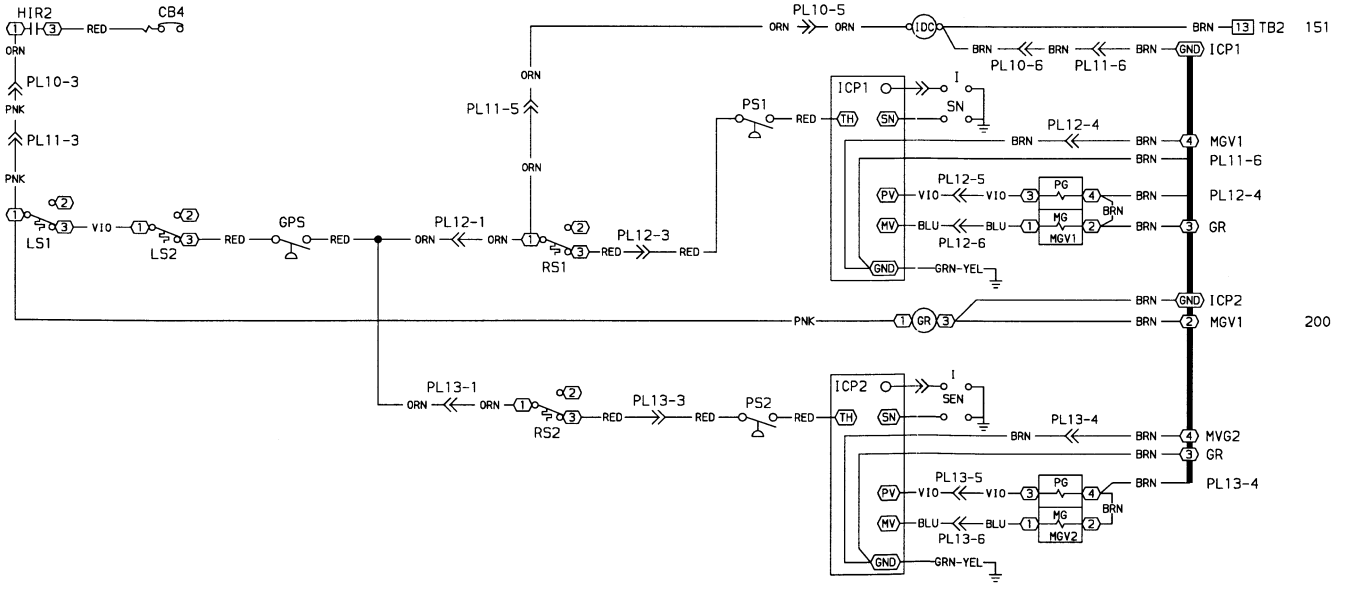
CB	— Circuit Breaker	**LS**	— Limit Switch
CR	— Control Relay	**LSR**	— Limit Switch Relay
CV	— Constant Volume	**MG**	— Main Gas
GPS	— Gas Pressrue Switch	**MGV**	— Main Gas Valve
GR	— Gas Relay	**PIC**	— Product Integrated Controls
HR	— Heater Relay	**PL**	— Plug Assembly
ICP	— Ignitor Control Pack	**PS**	— Pressure Switch
IDC	— Induced Draft Contactor	**SEN**	— Sensor

Fig. 13 — Wiring Diagram, 48DJ,FJ,FP,JJ,JP,NP034-048 Units

LOW HEAT



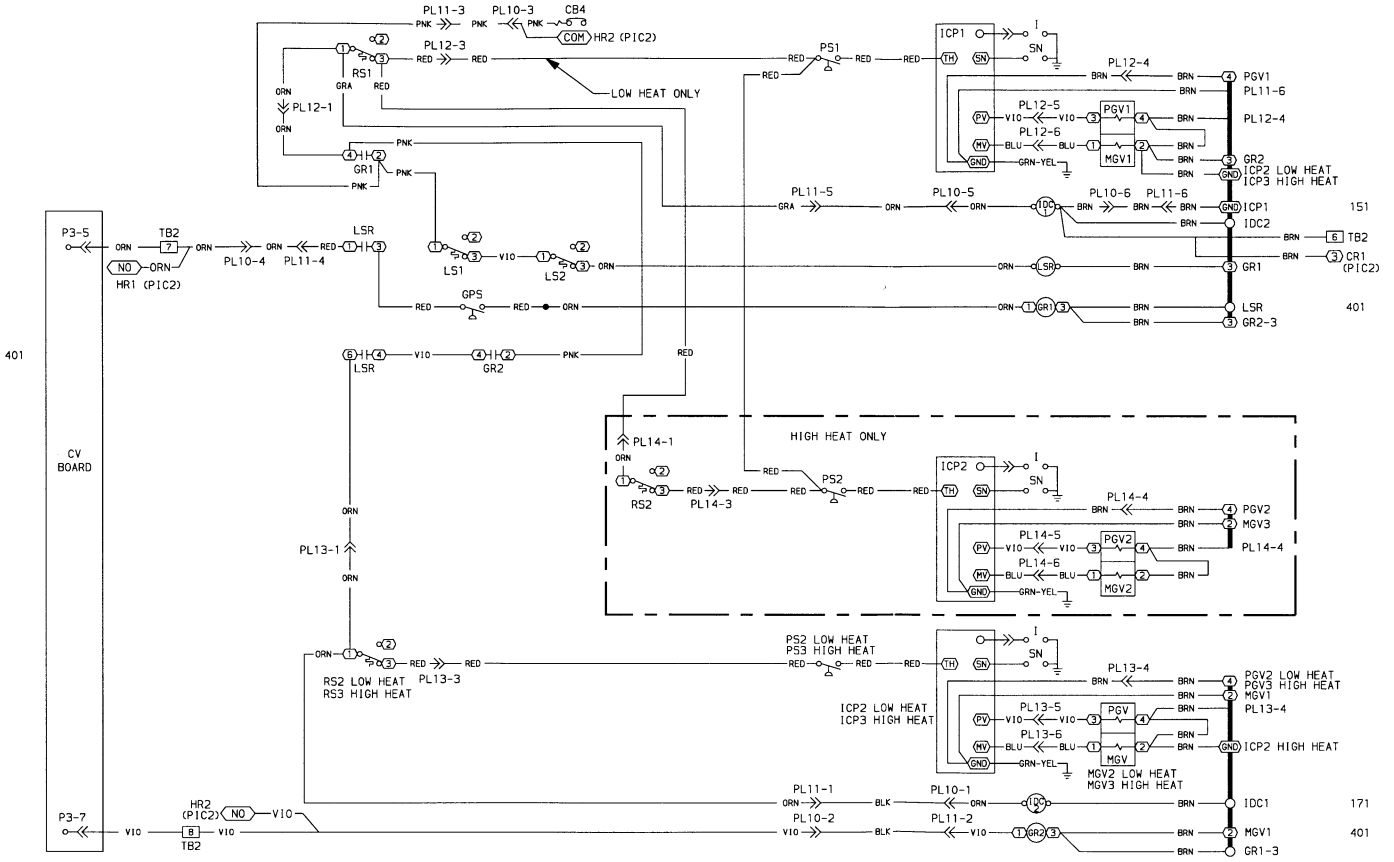
HIGH HEAT



LEGEND

CB	— Circuit Breaker	**MGV**	— Main Gas Valve
GPS	— Gas Pressrue Switch	**PG**	— Pilot Gas
GR	— Gas Relay	**PGV**	— Pilot Gas Valve
HIR	— Heater Interlock Relay	**PL**	— Plug Assembly
ICP	— Ignitor Control Pack	**PS**	— Pressure Switch
IDC	— Induced Draft Contactor	**RS**	— Rollout Switch
LS	— Limit Switch	**SN**	— Sensor
MG	— Main Gas	**TB**	— Terminal Block

Fig. 14 — Wiring Diagram, 48DK,FK,JK034-048 Units



LEGEND

CB	— Circuit Breaker	**I**	— Ignitor	**PGV**	— Pilot Gas Valve
COM	— Common	**ICP**	— Ignitor Control Pack	**PIC**	— Product Integrated Controls
CR	— Control Relay	**IDC**	— Induced Draft Contactor	**PL**	— Plug Assembly
CV	— Constant Volume	**LS**	— Limit Switch	**PS**	— Pressure Switch
GND	— Ground	**LSR**	— Limit Switch Relay	**RS**	— Rollout Switch
GPS	— Gas Pressure Switch	**MGV**	— Main Gas Valve	**SN**	— Sensor
GR	— Gas Relay	**NO**	— Normally Open	**TB**	— Terminal Block
HR	— Heater Relay	**P**	— Plug	**TH**	— Thermostat

Fig. 15 — Wiring Diagram, 48DJ,FJ,FP,JJ,JP,NP054-074 Units

48DKD,DKE,FKD,FKE,JKD,JKE,NKD054-074 UNITS (See Fig. 16) AND 48FKE,JKE034-048 UNITS (See Fig. 14)

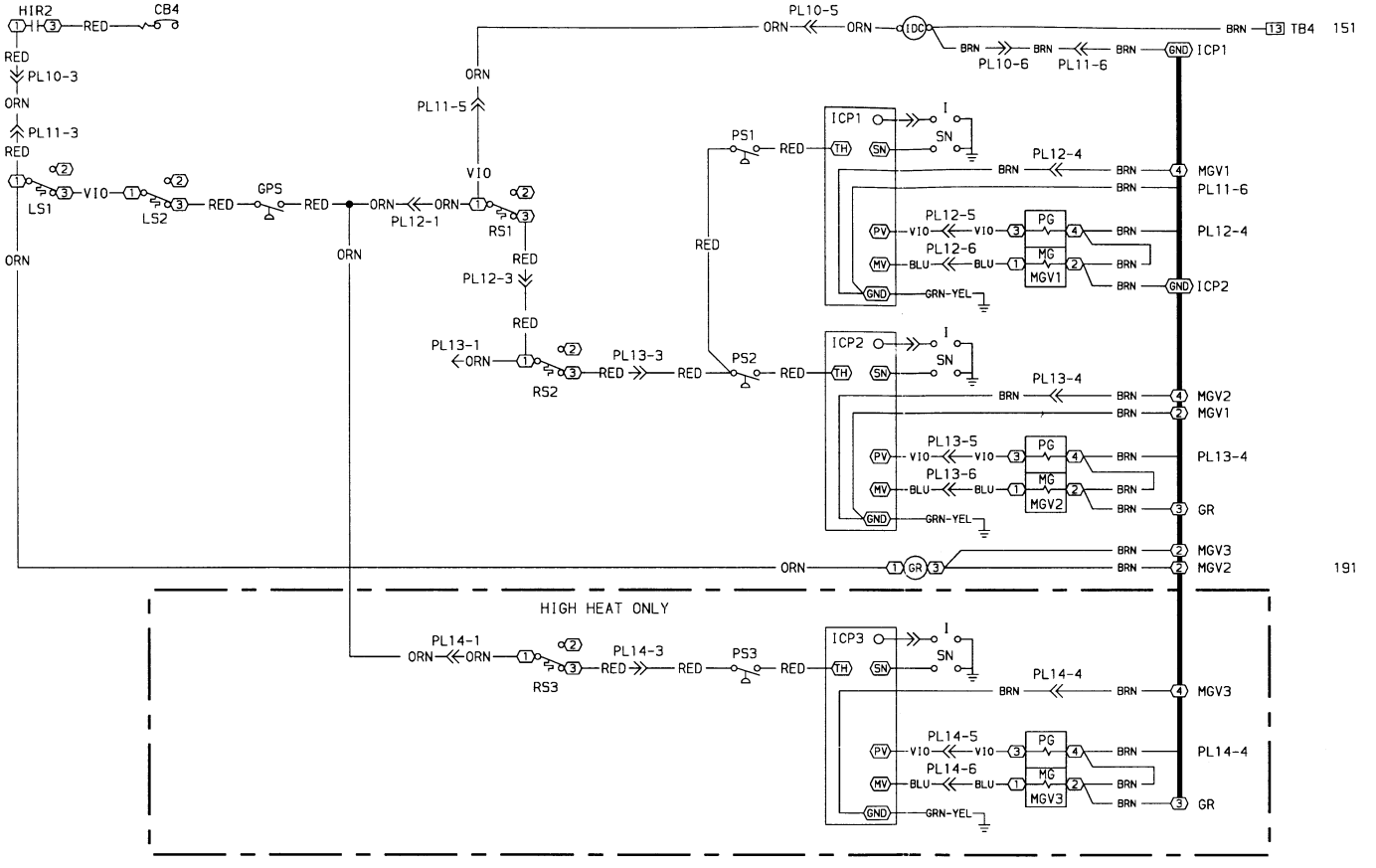
1. Attach the two 84-in. long red wires supplied to the low gas pressure switch (GPS).
2. Remove the 2 orange wires from limit switch 2 (LS2) terminal 3. Connect the stripped wire from GPS to the orange wires just removed using the connector provided.
3. Connect the other red wire from the GPS to LS2 terminal 3.

Labels — Attach the label diagrams included in the kit as follows:

1. Attach wiring diagrams from kit over existing diagram on the inside of the gas section access door and over the existing diagram on the inside of the control box access door. See Fig. 13-16 and Table 2 for the proper label diagrams for each unit.
2. Attach the propane conversion label from kit above the unit rating plate on each corner post. See Fig. 17.
3. Attach the completed conversion responsibility label from kit above the unit rating plate on the unit corner post. See Fig. 18.

Table 2 — Wiring Label Diagram Usage

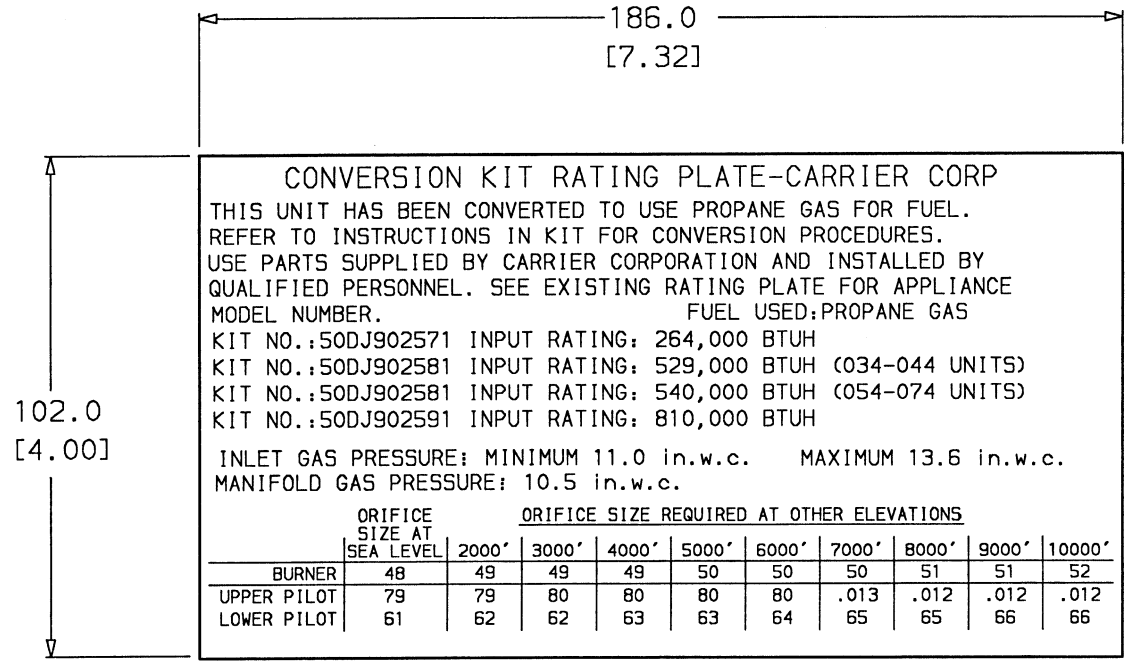
UNIT	LABEL DIAGRAM PROVIDED	QUANTITY
48DK,FK,JK034-048	50DW504161	2
48DJ,FJ,FP,JJ,JP, NP034-048	50DW504162	2
48DK,FK,JK054-074	50DW504163	2
48DJ,FJ,FP,JJ,JP NP054-074	50DW504164	2



LEGEND

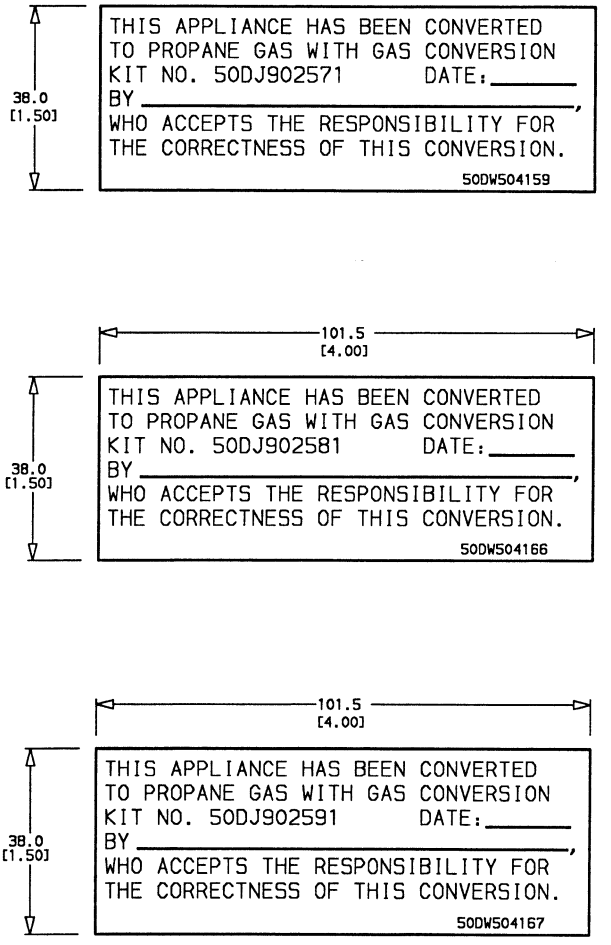
CB	— Circuit Breaker	**ICP**	— Ignitor Control Pack	**PS**	— Pressure Switch
GND	— Ground	**IDC**	— Induced Draft Contactor	**RS**	— Rollout Switch
GPS	— Gas Pressure Switch	**LS**	— Limit Switch	**SN**	— Sensor
HIR	— Heat Interlock Relay	**MGV**	— Main Gas Valve	**TB**	— Terminal Block
I	— Ignitor	**PL**	— Plug Assembly		

Fig. 16 — Wiring Diagram, 48DK,FK,JK054-074 Units


186.0
[7.32]
102.0
[4.00]
CONVERSION KIT RATING PLATE-CARRIER CORP
THIS UNIT HAS BEEN CONVERTED TO USE PROPANE GAS FOR FUEL.
REFER TO INSTRUCTIONS IN KIT FOR CONVERSION PROCEDURES.
USE PARTS SUPPLIED BY CARRIER CORPORATION AND INSTALLED BY
QUALIFIED PERSONNEL. SEE EXISTING RATING PLATE FOR APPLIANCE
MODEL NUMBER. FUEL USED:PROPANE GAS
KIT NO.:50DJ902571 INPUT RATING: 264,000 BTUH
KIT NO.:50DJ902581 INPUT RATING: 529,000 BTUH (034-044 UNITS)
KIT NO.:50DJ902581 INPUT RATING: 540,000 BTUH (054-074 UNITS)
KIT NO.:50DJ902591 INPUT RATING: 810,000 BTUH
INLET GAS PRESSURE: MINIMUM 11.0 in.w.c. MAXIMUM 13.6 in.w.c.
MANIFOLD GAS PRESSURE: 10.5 in.w.c.
ORIFICE SIZE AT SEA LEVEL
ORIFICE SIZE REQUIRED AT OTHER ELEVATIONS
2000' 3000' 4000' 5000' 6000' 7000' 8000' 9000' 10000'
BURNER 48 49 49 49 50 50 50 51 51 52
UPPER PILOT 79 79 80 80 80 80 .013 .012 .012 .012
LOWER PILOT 61 62 62 63 63 64 65 65 66 66

NOTE: Dimensions in [ ] are in inches.

Fig. 17 — Propane Conversion Label



NOTE: Dimensions in [ ] are in inches.

Fig. 18 — Conversion Responsiblity Label

START-UP

⚠ WARNING

Do not purge gas supply into the combustion chamber. Do not use a match or other open flame to check for gas leaks. Use a soap-and-water solution and check all gas piping for leaks. Failure to observe these warnings could result in an explosion causing personal injury or death.

Make certain that the gas supply pipe has been purged and all gas piping has been checked for leaks before starting the unit.

Adjusting Gas Input — The original gas valve is qualified to operate on propane gas, but the regulator must be adjusted for proper unit operation. See Table 3 for proper gas pressures and inputs.

The burner orifices from the kit are sized for the correct gas input when the heating value of the propane gas is 2500 Btu/cu ft with a specific gravity of 1.5 in. wg at a manifold pressure of 10.5 in. wg. (The propane gas supply pressure minimum is 11.0 in. wg, and the maximum is 13.6 in. wg.) Use a water manometer to measure the manifold pressure. If a spring manometer is used, make sure the manometer is calibrated.

Proceed as follows to measure and set the manifold pressure:

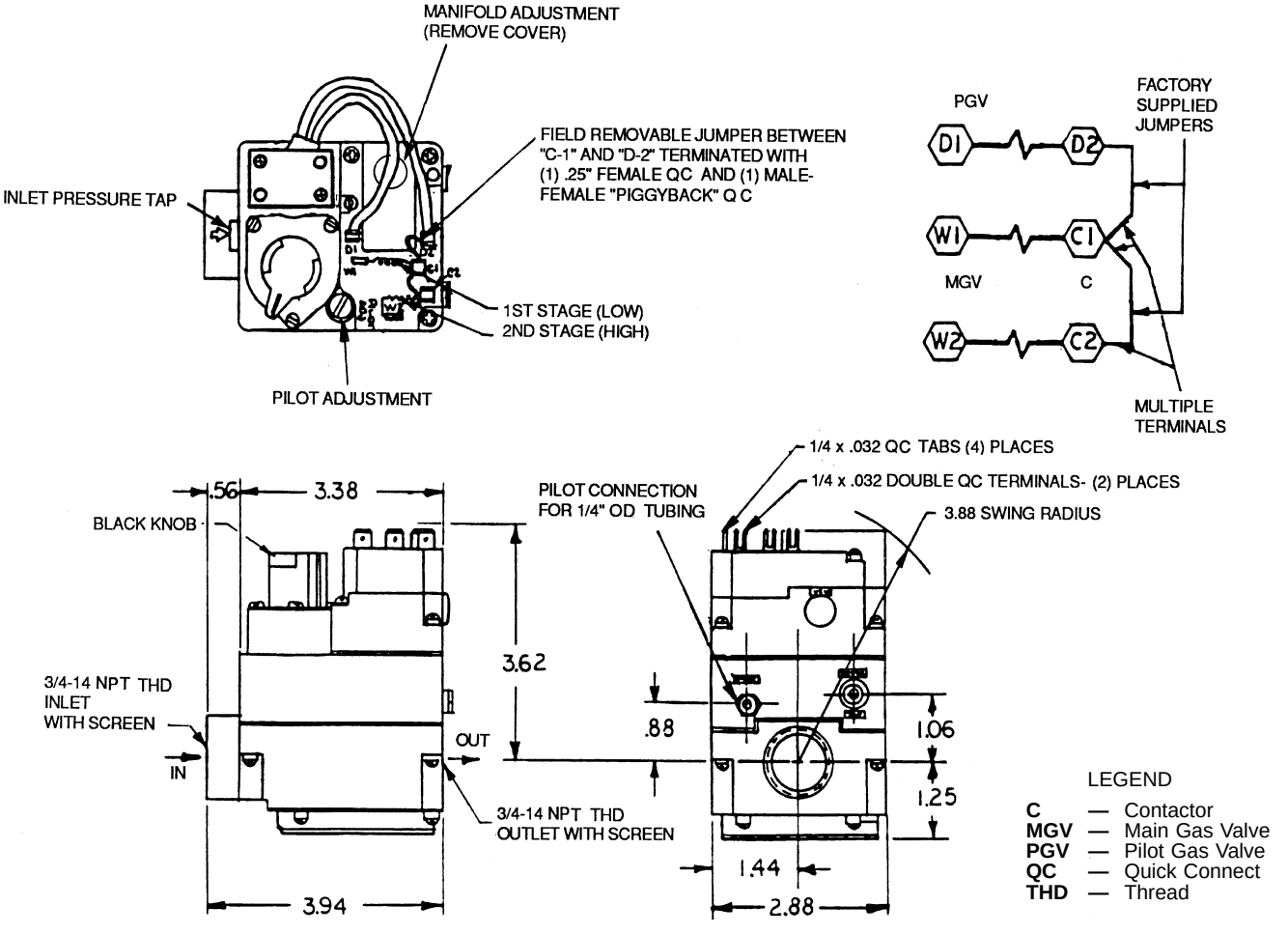
1. Turn off gas supply and then electrical power to the unit.
2. Remove pressure tap plug on burner manifold and connect manometer to unit. See Fig. 1 and 2.
3. Turn on electric power and gas to unit.
4. Set unit control to call for heat.
5. Using pilot adjustment screw, adjust pilot until it is a soft blue flame fully engulfing the sensor.
6. With unit operating and all burners fired, adjust manifold adjustment screw on gas valve (See Fig. 19 and 20) for 10.5 in. wg. Turn screw clockwise to increase pressure, or counterclockwise to decrease pressure.
7. Turn off gas and then electrical power to unit.
8. Remove manometer and replace plug in pressure tap.
9. Install cover screw on gas valve.

Checkout Procedure — Proceed as follows to test the newly installed propane gas system operation:

1. Turn on gas to the unit.
2. Check for normal operation of the ignition system, including pilot operation. Adjust pilot pressure if required. See Fig. 19 and 20.
3. Observe that the flames on each burner are light blue and ''soft'' in appearance, and that the flames are approximately the same for each burner.

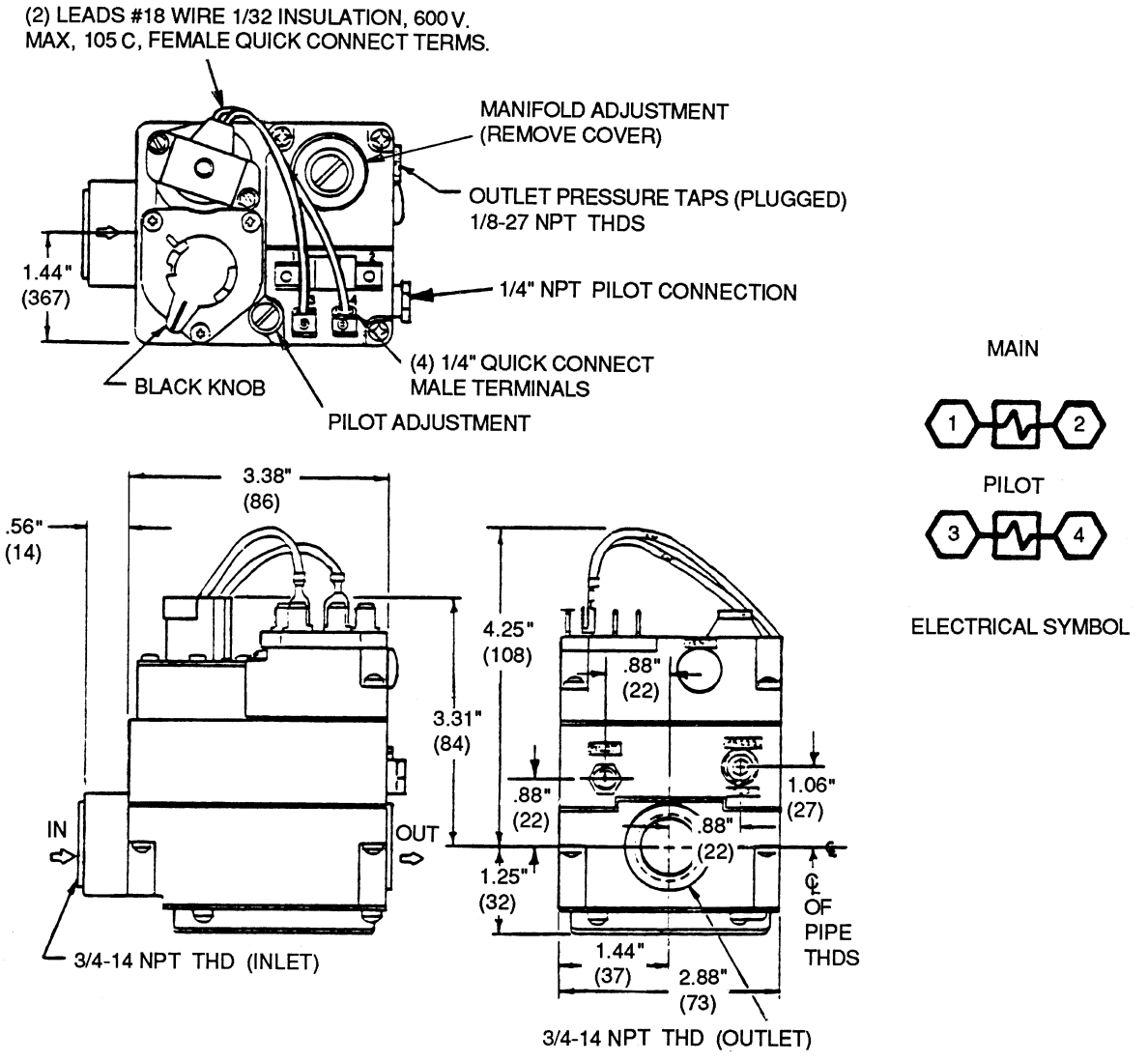
If the gas supply pressure falls below the set point of the pressure switch (approximately 5.5 in. wg), the gas valve will close and shut off gas supply to the unit. Determine the cause of low gas supply pressure and correct the condition.

Before leaving the installation, a complete operating cycle should be observed to ensure all components are functioning properly.



NOTE: All dimensions are in inches.

Fig. 19 — 48DJD,DKD,FJD,FKD,FPD,JJD,JKD,JPD,NPD034-048 Low Heat (2-Stage) Valve



LEGEND

THD — Thread

NOTE: Dimensions in ( ) are in millimeters.

Fig. 20 — 48DJE,FJE,FPE,JJE,JPE,NPE034-048 and 48DJ,DK,FJ,FK,FP,JJ,JK,JP,NP054-074 (One-Stage) Valve

Table 3 — Gas Section Physical Data

UNIT	48DJD,DKD,FJD, FKD,FPD,JJD, JKD,JPD,NPD034-048	48DJE,FJE,FKE, FPE,JJE,JKE, JPE,NPE034-048	48DJD,DKD,FJD, FKD,FPD,JJD, JKD,JPD,NPD054-074	48DJE,FJE,FKE, FPE,JJE,JKE, JPE,NPE054-074
NO. OF ORIFICES	**6**	**12**	**12**	**18**
GAS SUPPLY PRESSURE (in. wg)				
Natural Minimum	5.0	5.0	5.0	5.0
Maximum	13.0	13.0	13.0	13.0
Propane Minimum	11.0	11.0	11.0	11.0
Maximum	13.6	13.6	13.6	13.6
MANIFOLD PRESSURE (in. wg)				
Natural	2.9	3.0	3.0	3.0
Propane	10.5	10.5	10.5	10.5
NATURAL GAS				
Burner Orifice Part No.	LH32RF125	LH32RF125	LH32RF125	LH32RF125
Size (in.)	1/8	1/8	1/8	1/8
Pilot Orifice Size	48	48	48	48
Heating Input (Btuh)	264,000	529,000	540,000	810,000
PROPANE GAS				
Burner Orifice Part No.	LH32RF076	LH32RF076	LH32RF076	LH32RF076
Size (in.)	48	48	48	48
Pilot Orifice Size				
Upper	79	79	79	79
Lower	61	61	61	61
Heating Input (Btuh)	264,000	529,000	540,000	810,000

CONVERSION FROM LP GAS TO NATURAL GAS

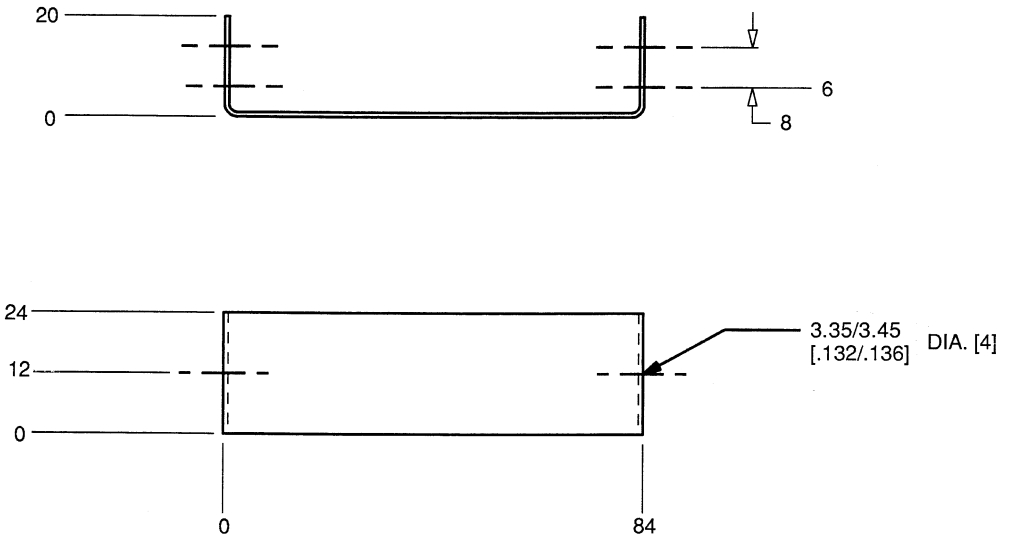
If the original natural gas parts were not saved when the unit was converted from natural gas to liquid propane (LP) gas, refer to Table 4 for the necessary parts to order from Carrier. Contact your local representative for more information.

Refer to Installation section for detailed instructions on how to accomplish the steps below.

1. Remove burner assemblies from unit.
2. Remove LP burner spuds and crossover tube.
3. Remove ignitor and sensor and reattach to opposite side of burner bracket.
4. Install natural gas crossover tube. Do not use spacer washers used on LP crossover tube.
5. Install natural gas burner spuds.
6. Remove blockoff and air baffle from 054-074 unit burner assemblies. See Fig. 6, 8, 9 and 10.
7. Adjust burner primary air opening to 5/8 inch. See Fig. 7.
8. Using pilot tube and elbow, connect crossover tube to gas valve pilot connection.
9. Reassemble burner assembly and install in unit.
10. Remove all LP labels from unit.
11. a. On 48DJD,FJD,FPD,JJD,JPD,NPD034-048 units, remove blue jumper wire from between terminals W1 and W2 on the gas valve. Reattach black wire to terminal W2.
    b. On all 054-074 units, remove flue restriction on flue outlet.
12. Jumper low gas pressure switch.
13. Sizes 034-048 only: Fabricate and install flue restrictor(s) in place of restriction(s) already in place. See Fig. 21 and 22.
14. Turn on main gas supply.
15. Adjust pilot flame and adjust gas input rate according to Table 3.
16. Check for normal operation of the ignition system. Several complete operating cycles should be observed before leaving the installation to ensure all items are functioning properly.

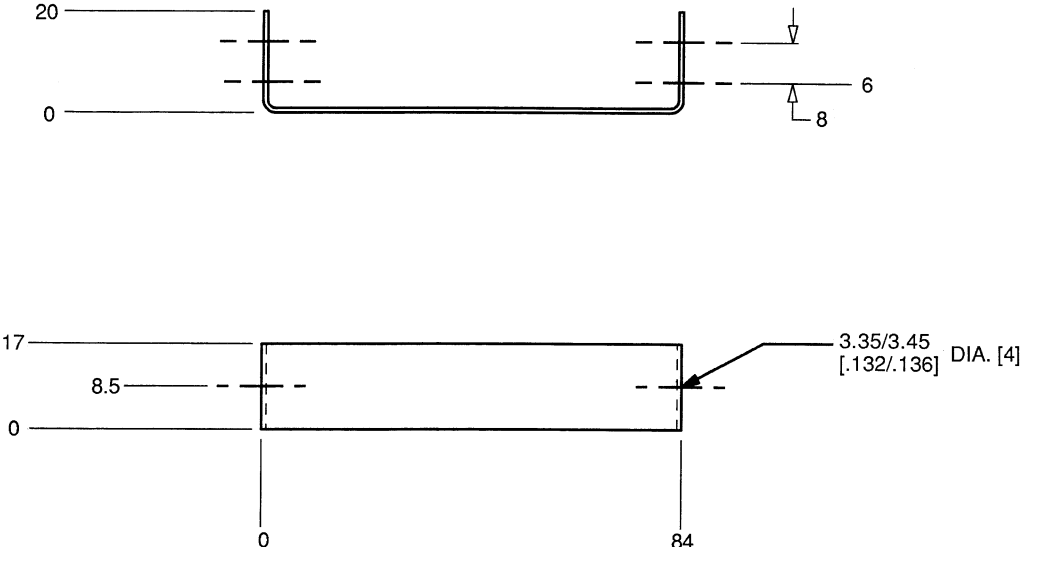
Table 4 — Part Numbers for Conversion from LP Gas to Natural Gas

UNIT	48DJD,DKD,FJD, FKD,FPD,JJD,JKD, JPD,NPD034-048 LOW HEAT	48DJE,FJE,FKE,FPE, JJE,JKE,JPE,NPE034-048 HIGH HEAT AND 48DJD,DKD,FJD,FKD,FPD, JJD,JKD,JPD,NPD054-074 LOW HEAT	48DJE,FJE,FKE,FPE, JJE,JKE,JPE,NPE054-074 HIGH HEAT
DESCRIPTION			
Crossover Tube With Orifice	50DW500277 (1)	50DW500277 (2)	50DW500277 (3)
Burner Orifice (Spuds)	LH32RF125 (6)	LH32RF125 (12)	LH32RF125 (18)
Pilot Tube (Valve to Crossover)	50DW400276 (1)	50DW400276 (2)	50DW400276 (3)



NOTE: Dimensions are in mm. Dimension in [ ] are in inches.

Fig. 21 — Flue Restrictor Plate, 48DJD,DKD,FJD,FKD,FPD,JJD,JKD,JPD,NPD034-048 (one required)



NOTE: Dimensions are in mm. Dimensions in [ ] are in inches.

Fig. 22 — Flue Restrictor Plate, 48DJE,FJE,FKE,FPE,JJE,JKE,JPE,NPE034-048 (2 required)

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